type, which latter group Freer* and Novy have demonstrated to be among the strongest germicides known. The formation of such toxic products would be of immense value to plants in protecting them against infection by micro-organisms, when their tissues are injured. Such protection would be most necessary in the regions of intense growth, and there in fact we find the oxidizing effect of the vegetable enzymes to be the greatest. The toxic products formed would undoubtedly have an injurious action upon the plant itself, were this not prevented by the reducing enzymes, which prevent the diffusion of these substances beyond their points of formation and requirement.

The oxidizing enzymes, no doubt, take part in other important physiological processes besides that of promoting the formation of toxic products. The importance of the latter function seems, however, to have been generally overlooked, and I believe it to constitute a phase of enzyme action well worthy of future investigation.

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THE ENDOSPERM ENZYME OF PHŒNIX DACTYLIFERA—PRELIMINARY REPORT.

The presence of an enzyme in the resting endosperm of the date seed has been demonstrated as follows: After the embryos were excised from a quantity of seeds the endosperms were ground to a coarse powder and this powder digested cold for six hours with distilled water. The aqueous extract thus obtained was made 40 per cent. alcoholic, after which precipitate No. 1 settled. This precipitate was collected over asbestos and washed with alcohol while the filtrate No. 1 was raised to 80 per cent. alcoholic, after which precipitate No. 2 settled. This precipitate No. 2 was collected over asbestos and washed with alcohol. A portion of precipitate No. 1 was digested with 95 per cent. alcohol with constant shaking for fifteen minutes. The extract was filtered and evaporated to dryness over steam. A very slight residue remained which was insoluble in water and probably consisted of very fine asbestos which passed through the filter. This residue insoluble in water would not affect Fehling's solution, as was expected. The remainder of precipitate No. 1 was extracted with water and the extract filtered. The filtrate was made 50 per cent. alcoholic and digested ten days at laboratory temperatures, after which time it was evaporated to dryness over steam, yielding residue No. 1. This residue was digested for several hours with 95 per cent. alcohol, the extract filtered and evaporated to dryness, yielding residue No. 2, which was found to be very soluble in water and to reduce Fehling's solution. Precipitate No. 1, consisting of carbohydrates insoluble in 40 per cent. alcohol and any proteid either insoluble or carried down with the carbohydrates—evidently during the ten days' digestion in 50 per cent. alcohol—developed a reducing sugar soluble in 95 per cent. alcohol. Precipitate No. 2 was extracted with water and the extract filtered. The filtrate thus obtained was measured equally into four flasks. Into each flask 5 c.c. of soluble starch was titrated. Flasks *A* and *B* were immediately made 80 per cent. alcoholic. Flasks *C* and *D* remained without alcohol. All four flasks were digested at 40° C. for six hours. The solutions were then evaporated to dryness, yielding residues A_1, B_1, C_1, D_1. Each of these residues was then digested for several hours with 95 per cent. alcohol. The extracts were filtered, and after evaporation to dryness the residues A_2, B_2, C_2, D_2 thus obtained were dried for one hour at 110° C., removed to desiccator and weighed with following results. $A_2 = 0.0085$ gms., $B_2 = 0.0090$ gms., $C_2 = 0.0080$ gms. and $D_2 = 0.0085$ gms. All of these residues were soluble in water and reduced Fehling's solution with a total of 0.0030 gms. of CuO. Whether this reducing sugar developed from the soluble starch or from the carbohydrates present in precipitate No. 2 is unknown. Evidently the activity of the enzyme contained in precipitate No. 2 is not inhibited by 80 per cent. alcohol.

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* Freer and Novy, *American Chemical Journal*, 27, 161–192.